

## CLAIMS

What is claimed is:

- 1 1. A method of specifying properties for instances that belong to classes, comprising the  
2 step of:  
3 associating with an instance of a class a per-instance method that is not a method in  
4 said class.
- 1 2. The method for Claim 1 wherein the step of associating a per-instance method  
2 includes:  
3 associating a policy with a method implementation for a particular method; and  
4 associating said policy with said instance.
- 1 3. The method for Claim 1 wherein said step of associating is performed by  
2 establishing a policy bundle that includes one or more policies and  
3 associating said instance with said policy bundle.
- 1 4. The method for Claim 3 further comprising the step of:  
2 storing within a database, objects that define said instance, said policy bundle, and  
3 said one or more policies.
- 1 5. The method for Claim 1 further comprising the step of:  
2 maintaining an object relational mapping system that indicates a correlation between  
3 said instance and data stored in a relational database.

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1 6. The method for Claim 1 wherein said step of associating includes establishing a  
2 pointer that belongs to said instance to point to a policy bundle that is associated with  
3 one or more policies.

1 7. The method for Claim 6 wherein associating said policy bundle with said one or more  
2 policies includes establishing a pointer that belongs to said policy bundle to point to  
3 said one or more policies.

1 8. The method for Claim 6 wherein associating said policy bundle with said one or more  
2 policies includes establishing a reference that belongs to said policy bundle to  
3 reference said one or more policies.

1 9. The method for Claim 1 wherein said step of associating includes establishing a  
2 reference that belongs to said instance that references a policy bundle that is  
3 associated with one or more policies.

1 10. The method for Claim 9 wherein associating said policy bundle with said one or more  
2 policies includes establishing a pointer that belongs to said policy bundle to point to  
3 said one or more policies.

1 11. The method for Claim 9 wherein associating said policy bundle with said one or more  
2 policies includes establishing a reference that belongs to said policy bundle to  
3 reference said one or more policies.

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1 12. The method for Claim 1 wherein said step of associating includes using a hash table  
2 for a policy bundle and said policy bundle is associated with said instance.

1 13. The method for Claim 12 wherein said step of associating includes placing an entry in  
2 said hash table and further comprising the computer-implemented steps of:  
3 associating a key and a value with said entry;  
4 using a method name as said key; and  
5 using an association between said policy bundle and said policy as said value.

1 14. The method for Claim 13 wherein said value is a pointer to said policy.

1 15. The method for Claim 13 wherein said value is a reference to said policy.

1 16. The method for Claim 1 wherein said class is a file type and said instance is a file of  
2 said file type in a file system wherein the step of associating includes associating said  
3 file of said file type with said per-instance method that is not a method of said file  
4 type.

1 17. A method of executing a method implementation, comprising the computer-  
2 implemented steps of:  
3 in response to detecting use of a particular method with a particular instance of a  
4 class, performing the steps of:

5           determining the implementation of said method to execute by determining  
6           whether any implementation of said method has been associated with  
7           said particular instance; and  
8           if an implementation of said method has been associated with said particular instance,  
9           then executing the implementation of the method that has been associated  
10          with said particular instance.

1   18.   The method for Claim 17 wherein said class is a file type and said particular instance  
2          is a file of said file type in a file system wherein the step of executing the  
3          implementation of the method further comprise the step of:  
4          executing said implementation of said method on said file in said file system.

1   19.   The method of Claim 17 further comprising the computer-implemented steps of:  
2          if no implementation of said method is associated with said particular instance, then  
3                  performing the steps of  
4                  determining whether any implementation of said method has been associated  
5                  with any class in a line of inheritance of said particular instance;  
6                  if an implementation of said method has been associated with a class in a line  
7                  of inheritance of said particular instance, then executing the  
8                  implementation of the method that has been associated with the class.

1   20.   The method of Claim 19 wherein said implementation of said method that has been  
2          associated with said particular instance is a first implementation of said method and a  
3          second implementation of said method is associated with said line of inheritance; and

4 the step of executing is performed by executing the first implementation and not the  
5 second implementation.

1 21. The method for Claim 19 further comprising the computer-implemented step of, if no  
2 implementation of said method has been associated with any class in a line of  
3 inheritance of said particular instance, then executing a default method  
4 implementation.

1 22. A method of specifying properties for instances that belong to classes, comprising the  
2 step of:  
3 associating with a first instance of a class a per-instance method that is not associated  
4 with a second instance of said class.

1 23. The method for Claim 22 wherein said class is a file type and said first instance is a  
2 file of said file type in a file system wherein the step of associating includes  
3 associating said file of said file type with said per-instance method.

1 24. The method for Claim 22 wherein the step of associating a per-instance method  
2 includes:  
3 associating a policy with a method implementation for a particular method; and  
4 associating said policy with said instance.

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- 1 25. The method for Claim 22 wherein said step of associating is performed  
2 by establishing a policy bundle that includes one or more policies and  
3 associating said first instance with said policy bundle.
- 1 26. The method for Claim 25 further comprising the step of:  
2 storing within a database, objects that define said instance, said policy bundle, and  
3 said one or more policies.
- 1 27. The method for Claim 22 further comprising the step of:  
2 maintaining an object relational mapping system that indicates a correlation between  
3 said instance and data stored in a relational database.
- 1 28. The method for Claim 22 wherein said step of associating includes establishing a  
2 pointer that belongs to said instance to point to a policy bundle that is associated with  
3 one or more policies.
- 1 29. The method for Claim 28 wherein associating said policy bundle with said one or  
2 more policies includes establishing a pointer that belongs to said policy bundle to  
3 point to said one or more policies
- 1 30. The method for Claim 28 wherein associating said policy bundle with said one or  
2 more policies includes establishing a reference that belongs to said policy bundle to  
3 reference said one or more policies.

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31. The method for Claim 22 wherein said step of associating includes establishing a reference that belongs to said instance that references a policy bundle that is associated with one or more policies.

32. The method for Claim 31 wherein associating said policy bundle with said one or more policies includes establishing a pointer that belongs to said policy bundle to point to said one or more policies.

33. The method for Claim 31 wherein associating said policy bundle with said one or more policies includes establishing a reference that belongs to said policy bundle to reference said one or more policies.

34. The method for Claim 22 wherein said step of associating includes using a hash table for a policy bundle and said policy bundle is associated with said first instance.

35. The method for Claim 34 wherein said step of associating includes placing an entry in said hash table and further comprising the steps of:  
associating a key and a value with said entry;  
using a method name as said key; and  
using an association between said policy bundle and said policy as said value.

36. The method for Claim 35 wherein said value is a pointer to said policy.

37. The method for Claim 35 wherein said value is a reference to said policy.

1 38. A computer-readable medium carrying one or more sequences of instructions for  
 2 specifying properties for instances that belong to classes, wherein execution of the  
 3 one or more sequences of instructions by one or more processors causes the one or  
 4 more processors to perform the steps of:  
 5 associating with an instance of a class a per-instance method that is not a method in  
 6 said class.

1 39. The computer-readable medium as recited in Claim 38, further comprising  
 2 instructions which, when executed by the one or more processors, cause the one or  
 3 more processors to carry out the steps of:  
 4 associating a policy with a method implementation for a particular method; and  
 5 associating said policy with said instance.

1 40. The computer-readable medium as recited in Claim 38 wherein said class is a file  
 2 type and said instance is a file of said file type in a file system wherein the step of  
 3 associating includes associating said file of said file type with said per-instance  
 4 method that is not a method of said file type.

1 41. The computer-readable medium as recited in Claim 38 wherein said step  
 2 of associating is performed by establishing a policy bundle that includes  
 3 one or more policies and associating said instance with said policy  
 4 bundle.



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1 42. The computer-readable medium as recited in Claim 41 further comprising the step of:  
2 storing within a database, objects that define said instance, said policy bundle, and  
3 said one or more policies.

1 43. The computer-readable medium as recited in Claim 38 further  
2 comprising the step of:  
3 maintaining an object relational mapping system that indicates a correlation between  
4 said instance and data stored in a relational database.

1 44. The computer-readable medium as recited in Claim 38 wherein said step of  
2 associating includes establishing a pointer that belongs to said instance to point to a  
3 policy bundle that is associated with one or more policies.

1 45. The computer-readable medium as recited in Claim 44 wherein associating said  
2 policy bundle with said one or more policies includes establishing a pointer that  
3 belongs to said policy bundle to point to said one or more policies.

1 46. The computer-readable medium as recited in Claim 44 wherein associating said  
2 policy bundle with said one or more policies includes establishing a reference that  
3 belongs to said policy bundle to reference said one or more policies.

1 47. The computer-readable medium as recited in Claim 38 wherein said step of  
2 associating includes establishing a reference that belongs to said instance that  
3 references a policy bundle that is associated with one or more policies.

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1 48. The computer-readable medium as recited in Claim 47 wherein associating said  
2 policy bundle with said one or more policies includes establishing a pointer that  
3 belongs to said policy bundle to point to said one or more policies.

1 49. The computer-readable medium as recited in Claim 47 wherein associating said  
2 policy bundle with said one or more policies includes establishing a reference that  
3 belongs to said policy bundle to reference said one or more policies.

1 50. The computer-readable medium as recited in Claim 38 wherein said step of  
2 associating includes using a hash table for a policy bundle and said policy bundle is  
3 associated with said instance.

1 51. The computer-readable medium as recited in Claim 50 wherein said step of  
2 associating includes placing an entry in said hash table and further comprising the  
3 computer-implemented steps of:  
4 associating a key and a value with said entry;  
5 using a method name as said key; and  
6 using an association between said policy bundle and said policy as said value.

1 52. The computer-readable medium as recited in Claim 51 wherein said value is a pointer  
2 to said policy.

1 53. The computer-readable medium as recited in Claim 51 wherein said value is a  
2 reference to said policy.

1 54. A computer-readable medium carrying one or more sequences of instructions for  
2 executing a method implementation, wherein execution of the one or more sequences  
3 of instructions by one or more processors causes the one or more processors to  
4 perform the steps of:

5 in response to detecting use of a particular method with a particular instance of a  
6 class, performing the steps of:

7 determining the implementation of said method to execute by determining  
8 whether any implementation of said method has been associated with  
9 said particular instance; and

10 if an implementation of said method has been associated with said particular instance,  
11 then executing the implementation of the method that has been associated  
12 with said particular instance.

1 55. The computer-readable medium as recited in Claim 54 wherein said class is a file  
2 type and said particular instance is a file of said file type in a file system wherein the  
3 step of executing the implementation of the method further comprises the step of:  
4 executing said implementation of said method on said file in said file system.

1 56. The computer-readable medium as recited in Claim 54 further comprising the  
2 computer-implemented steps of:

if no implementation of said method is associated with said particular instance, then performing the steps of determining whether any implementation of said method has been associated with any class in a line of inheritance of said particular instance; if an implementation of said method has been associated with a class in a line of inheritance of said particular instance, then executing the implementation of the method that has been associated with the class.

57. The computer-readable medium as recited in Claim 56 wherein said implementation of said method that has been associated with said particular instance is a first implementation of said method and a second implementation of said method is associated with said line of inheritance; and the step of executing is performed by executing the first implementation and not the second implementation.

58. The computer-readable medium as recited in Claim 51 further comprising the computer-implemented step of, if no implementation of said method has been associated with any class in a line of inheritance of said particular instance, then executing a default method implementation.

59. A computer-readable medium carrying one or more sequences of instructions for specifying properties for instances that belong to classes, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

5 associating with a first instance of a class a per-instance method that is not associated  
6 with a second instance of said class.

1 60. The computer-readable medium as recited in Claim 59 wherein said class is a file  
2 type and said first instance is a file of said file type in a file system wherein the step  
3 of associating includes associating said file of said file type with said per-instance  
4 method.

1 61. The computer-readable medium as recited in Claim 59 wherein the step of associating  
2 a per-instance method includes:  
3 associating a policy with a method implementation for a particular method; and  
4 associating said policy with said instance.

1 62. The computer-readable medium as recited in Claim 59 wherein said step  
2 of associating is performed by establishing a policy bundle that includes  
3 one or more policies and associating said first instance with said policy  
4 bundle.

1 63. The computer-readable medium as recited in Claim 62 further comprising the step of:  
2 storing within a database, objects that define said instance, said policy bundle, and  
3 said one or more policies.

1 64. The computer-readable medium as recited in Claim 59 further  
2 comprising the step of:

3 maintaining an object relational mapping system that indicates a correlation between  
4 said instance and data stored in a relational database.

1 65. The computer-readable medium as recited in Claim 59 wherein said step of  
2 associating includes establishing a pointer that belongs to said instance to point to a  
3 policy bundle that is associated with one or more policies.

1 66. The computer-readable medium as recited in Claim 65 wherein associating said  
2 policy bundle with said one or more policies includes establishing a pointer that  
3 belongs to said policy bundle to point to said one or more policies.

1 67. The computer-readable medium as recited in Claim 65 wherein associating said  
2 policy bundle with said one or more policies includes establishing a reference that  
3 belongs to said policy bundle to reference said one or more policies.

1 68. The computer-readable medium as recited in Claim 59 wherein said step of  
2 associating includes establishing a reference that belongs to said instance that  
3 references a policy bundle that is associated with one or more policies.

1 69. The computer-readable medium as recited in Claim 68 wherein associating said  
2 policy bundle with said one or more policies includes establishing a pointer that  
3 belongs to said policy bundle to point to said one or more policies.

1 70. The computer-readable medium as recited in Claim 68 wherein associating said  
2 policy bundle with said one or more policies includes establishing a reference that  
3 belongs to said policy bundle to reference said one or more policies.

1 71. The computer-readable medium as recited in Claim 59 wherein said step of  
2 associating includes using a hash table for a policy bundle and said policy bundle is  
3 associated with said first instance.

1 72. The computer-readable medium as recited in Claim 71 wherein said step of  
2 associating includes placing an entry in said hash table and further comprising the  
3 steps of:  
4 associating a key and a value with said entry;  
5 using a method name as said key; and  
6 using an association between said policy bundle and said policy as said value.

1 73. The computer-readable medium as recited in Claim 72 wherein said value is a pointer  
2 to said policy.

1 74. The computer-readable medium as recited in Claim 72 wherein said value is a  
2 reference to said policy.